

## CLAIMS

1. A radio communication system having a communication channel comprising a plurality of paths between a transmitter and a receiver each having a plurality of antennas, wherein the transmitter and receiver are operable according to at least two radio standards simultaneously.
2. A transmitter for use in a radio communication system having a communication channel comprising a plurality of paths between a transmitter and a receiver each having a plurality of antennas, wherein means are provided for simultaneous operation of the transmitter according to at least two radio standards.
3. A transmitter as claimed in claim 2, characterised in that air interface means are provided for each supported radio standard.
4. A transmitter as claimed in claim 2, characterised in that air interface means are provided for at least one supported radio standard and in that means are provided for transmitting data for a first radio standard via air interface means of a second radio standard.
5. A transmitter as claimed in claim 2, characterised in that the transmitter further comprises path characterisation means for determining at least one transmission property of each path, categorisation means for assigning a category to a set of data for transmission and means responsive to said category and said at least one transmission property for determining a coding and mapping to apply to the set of data to the transmitter's antennas, thereby determining over which path or paths the set of data will be transmitted.
6. A transmitter as claimed in claim 5, characterised in that the categorisation means is adapted to assign different categories to respective

segments of data from an application depending on at least one of their relative importance, required quality of service, data rate, tolerable transmission delay and tolerable error rate.

5        7. A transmitter as claimed in claim 5, characterised in that the path characterisation means is adapted to determine at least one of a delay and a signal-to-noise ratio for each path.

10      8. A transmitter as claimed in claim 2, characterised in that the supported radio standards include UMTS and HIPERLAN.

15      9. A receiver for use in a radio communication system having a communication channel comprising a plurality of paths between a transmitter and a receiver each having a plurality of antennas, wherein means are provided for simultaneous operation of the receiver according to at least two radio standards.

20      10. A receiver as claimed in claim 9, characterised in that air interface means are provided for each supported radio standard.

25      11. A method of operating a radio communication system having a communication channel comprising a plurality of paths between a transmitter and a receiver each having a plurality of antennas, the method comprising simultaneously transmitting according to at least two radio standards.